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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/783,879 | 02/20/2004 | Joachim Sacher | SA 110 | 7738 |

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| EXAMINER | |
|---|---|
| UNELUS, ERNEST | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2828 | |

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

HA

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/783,879 | SACHER, JOACHIM | |
| | Examiner | Art Unit | |
| | Ernest Unelus | 2828 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Priority*

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 19 November 2003. It is noted, however, that applicant has not filed a certified copy of the Germany 2003 17 904.8 application as required by 35 U.S.C. 119(b).

### *Information Disclosure Statement*

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP 5609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. A copy of all non-patent literature and foreign patent documents need to accompany the PTO-892.

### *Drawings*

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5.) because they include the following reference character(s) not mentioned in the description: claim 4 referred to "an axial length (10)" that is not shown in Fig. 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37

CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 5, and 16-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Meheys et al. (US pat. 5,537,432).

With respect to claim 1, Mehuys discloses a laser diode arrangement for generating single mode tunable laser radiation (Fig. 15) comprising a laser diode (156) having a rear facet (154) and a front facet (162) and forming a first resonator, an external, second resonator coupled said first resonator, at least one optical transmission component (160) and at least one wavelength selective optical reflection element (158,

152) arranged the laser light path between said first and said second resonators for coupling light back to the first resonator by way of said rear facet (154). In regards to the ratio of the reflectivity of the rear facet (154) to the reflectivity the optical reflection element (158) being smaller than 1, reference discloses reflectivity of the rear facet to be less than 0.1%. The reference did not disclose the reflectivity of the optical reflection element. However, in order for the ratio to of the reflectivity of the rear facet (154) to the reflectivity the optical reflection element (158) being smaller than 1, the reflectivity of the optical reflection element has to be greater that 0.1%. It is inherent for the reflectivity of the grating reflector to be greater than 0.1 %.

With respect to claim 2, In regards to the ratio of the reflectivity of the rear facet (154) to the reflectivity the optical reflection element (158) being smaller than 0.1, reference discloses reflectivity of the rear facet to be less than 0.1%. The reference did not discloses the reflectivity of the optical reflection element. However, in order for the ratio to of the reflectivity of the rear facet (154) to the reflectivity the optical reflection element (158) being smaller than 0.1, the reflectivity of the optical reflection element has to be greater that 1.0 %. It is inherent for the reflectivity of the grating reflector to be greater than 1.0 %.

With respect to claim 3, Mehuys discloses wherein the reflectivity of the rear facet (154) is 0.01 or smaller and the reflectivity of the optical reflection element (154) is at least 0.95 (see col. 4, lines 25-27).

With respect to claim 4, Mehuys discloses wherein the laser diode (11) has an axial length (29), which is at least 500 gm (col. 6, line 63).

With respect to claim 5, Mehuys discloses where an optical transmission component (142) is arranged adjacent the rear facet (134) (fig. 13).

With respect to claim 16, Mehuys discloses the rear facet of said laser diode is high-reflection coated (see col. 4, lines 25-27).

With respect to claim 17, Mehuys discloses wherein the front facet external resonator of the laser diode is provided with an antireflection coating (see fig. 15).

With respect to claim 18, Mehuys discloses wherein the reflectivity of the antireflection-coated front facet of said laser diode is less than 0.001(col. 4, line 28).

With respect to claim 19, Mehuys discloses wherein said laser diode (156) includes a zone which has an active zone of rectangular or trapezoidal shape (see fig. 15).

With respect to claim 20, Mehuys discloses wherein said optical transmission component includes collimator (160) (see fig. 15).

With respect to claim 21, Mehuys discloses wherein said wavelength selective reflection element (158) is an optical diffraction grating (see fig. 15).

With respect to claim 22, Mehuys discloses wherein said wavelength selecting ref lection element (152) is a mirror (see col. 9, line 20).

With respect to claim 23, Mehuys discloses wherein said laser diode and said external second resonator form a littman and a littrow arrangement (see fig. 15 and col. 9, line 14).

With respect to claim 24, Mehuys discloses a tunable laser diode (col. 1, line 32), which is also known as quantum cascade laser. For example, see Baum et al. (US pat. 6,955, 652).

With respect to claims 25-27, Mehuys discloses a laser diode arrangement for generating single mode tunable laser radiation (Fig. 15) comprising a laser diode (156) having a rear facet (154) and a front facet (162) and forming a first resonator, an external, second resonator coupled said first resonator, at least one optical transmission component (160) [that can be a GRIN rod (cylinder) lens (see col. 4, line 35), for example a GRIN rod also comprise a collimator as discloses by Gfeller et al. US pat. 5,271,075, Gottsche et al. US pat. 5,255,428, and Tomlinson, III US pat. 4,111,524],

said optical transmission component (collimator) having an axis, which extents essentially parallel to the laser diode axis (see fig. 15), and at least one wavelength selective optical reflection element (158, 152) arranged the laser light path between said first and said second resonators for coupling light back to the first resonator by way of said rear facet (154).

With respect to claim 28, Mehuys teaches wherein said optical reflection element (15) comprises partial gratings (col. 5, lines 22-24), which arranged at an angle of 90 relative each other (col. 8, lines 46-55).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mehuys et al. (US pat. 5,537,432) in view of Nitta et al. (US pat. 5, 901,166).

With respect to claims 6-12, Mehuys disclose everything as claimed above without specifically discloses a structure to change the coupling of a first resonator to a second resonator. A structure, dispose on a first resonator and on a laser diode,

comprises two independently controllable connector segments, wherein said connector contact is divided along a plan extending normal to the longitudinal axis the laser diode and the first connector segment which disposed adjacent the rear facet has a length which greater than length of the second connector segment, a control circuit for supplying control currents and the first connector segment having a constant current, and where this structure is for changing the coupling of a first resonator to a second resonator is taught by Nitta (figures 34, 4; col. 7, lines 39-52, col. 17, lines 1-9, and col. 2, lines 46-51). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Nitta's invention with Mehuys, simply, because the control circuit drive an electrical current to the circuit, as indicated by Nitta (col. 17, lines 7-9).

With respect to claims 13 and 14, Mehuys discloses a rotate-able wavelength selective optical reflection elements [Fig. 15 (152, 158, 160)] with respect to the laser diode (11, 136, 156) and wherein current supplied said to a second connector segment (284) variable depending on the position of the of the reflected elements and where the position of the of the reflected elements varies the current supplied said to a second connector segment (284) (col. 13, lines 61-67 and col. 14, lines 1-24). Mehuys fail to specifically disclose that the current comes from a control circuit. The current coming from a control circuit is well taught by Nitta (FIG. 34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Nitta's invention with Mehuys to modulate the signal, as indicated by Nitta (col. 17, line 52).

With respect to claim 15, Mehuys discloses a current supplied to the second connector segment is adjustable depending on the power laser radiation coupled out of the laser diode arrangement (col. 15, lines 1-11). ). Mehuys fail to specifically disclose that the current comes from a control circuit. The current coming from a control circuit is well taught by Nitta (FIG. 34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Nitta's invention with Mehuys to modulate the signal, as indicated by Nitta (col. 17, line 52).

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See In re Goodman, 11 F.3d 1046, 29 USPQZd 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982). In re Vogel, 422 F.2d 438, 1 64 USPQ 619 (CCPA 1970); and, In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1 .130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5, 6-16, and 16-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as to an invention not patentably distinct from claims 1-2, 3-8, and 9-26 of commonly assigned application 10/784,029. Although the conflicting claims are not identical, they are not patentably distinct from each other because the differences are in specially defined terms and not in basic structure.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sacher (US pat. 5,867,512) discloses a tuning arrangement for a semiconductor diode without specifically disclosing a control circuit with two separated connectors connected to the laser diode.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is 571-272-8596. The examiner can normally be reached on 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Minsun Harvey
Supervisor
Art Unit 2828

*E.U*